Triterpenes and Flavonol Glucuronides from *Oenothera cheiranthifolia*

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A new ursane-type triterpene, named as cheiranthic acid (**1**), was isolated from the MeOH extract of whole plants of *Oenothera cheiranthifolia* (Onagraceae) along with an isomeric pair of known oleanane- and ursane-type triterpenes (arjunolic acid and asiatic acid) and three flavonol glucuronide analogues (quercetin 3-*O*-glucuronide, its *n*-butyl ester, and myricetin 3-*O*-glucuronide). Their structures were elucidated based on spectroscopic evidence.

Key words *Oenothera cheiranthifolia*; Onagraceae; cheiranthic acid; ursane-type triterpene; oleanane-type triterpene; flavonol glucuronide

Oenothera cheiranthifolia (Onagraceae), called Beach-Primrose in English, is a perennial that has wiry and prostrate stems (radiating from a central rosette of leaves) and bright yellow flowers (in a small-flowered form with petals to one-third inch long) and grows flat on the sandy beach from Point Conception, Santa Barbara County, California to Coos Bay, Oregon.¹⁾

As a part of a series of our phytochemical studies on western North American plants, chemical components of the MeOH extract obtained from whole plants of *O. cheiranthifolia* were investigated and as a result, a new ursane-type triterpene named as cheiranthic acid (**1**) was isolated together with an isomeric pair of known oleanane- and ursane-type triterpenes, arjunolic acid (**2**) and asiatic acid (**3**), and three known flavonols, 3-*O*- β -D-glucuronides of quercetin (**4**) and myricetin (**5**) and the *n*-butyl ester of **4** (**6**). This paper describes the isolation and structural elucidation of these components.

Each of the EtOAc- and *n*-BuOH soluble parts obtained from the MeOH extract was separated by a combination of silica gel, octadecyl silica gel (ODS), and Sephadex LH-20 column chromatography and HPLC separation to isolate each of a new (**1**) and two known (**2**, **3**) triterpenes and an abundant flavonol component (**4**) from the EtOAc soluble part and three flavonol glucuronide analogues (**4**–**6**) from the *n*-BuOH soluble part.

A new triterpene, cheiranthic acid (**1**), a colorless glassy solid, $[\alpha]_D^{25} +81.1^\circ$ (CHCl₃), gave the molecular ion peak at m/z 486 (13%) along with abundant and significant fragment ions such as at m/z 248 (100%) and at m/z 203 (45%) in electron impact (EI)-MS. Furthermore, the molecular formula was determined as C₃₀H₄₆O₅ based on the high resolution (HR)-MS data (m/z 486.334) of the M⁺ ion. The ¹H-NMR spectrum of **1** exhibited signals due to four tertiary methyls [δ 0.85 (26-Me), 1.08 (24-Me), 1.11 (27-Me), and 1.35 (25-Me)], two secondary methyls [δ 0.90 (d, $J=6.6$ Hz, 29-Me) and 0.95 (d, $J=6.3$ Hz, 30-Me)], a hydroxymethylene [δ 3.44 (1H, d, $J=10.4$ Hz) and 3.75 (1H, d, $J=10.4$ Hz), 23-CH₂OH], an oxygenated methine [δ 3.92 (dd, $J=12.0$, 5.0, 3 α -ax. H)], and an olefinic proton [δ 5.27 (1H, t-like, $J=3.5$ Hz)]. The ¹³C-NMR spectrum of **1** indicated that **1** was constituted by thirty carbon atoms including a cyclic ketone

on a cyclohexane ring [δ_C 211.9 (C-1)],²⁾ a carboxyl carbon [δ_C 181.4 (C-28)],²⁾ and two olefinic carbons [δ_C 126.4 (C-12) and 137.2 (C-13)]. The above-mentioned spectral evidence suggested that **1** is a triterpenic acid having an ursolic acid framework and an urs-12-en-28-oic acid structure proposed for **1** was further corroborated by the following EI- and HR-EI-MS spectral evidence: the molecular ion underwent the retro-Diels-Alder fragmentation of the 12–13 double bond in the ring C to yield a typical fragment ion (m/z 248.177 observed for C₁₆H₂₄O₂; the base peak), arising from the D/E ring of **1**.³⁾ Furthermore, the second abundant fragment ion observed at m/z 203 (45%) in the EI-MS and at m/z 203.179 (Calcd for C₁₅H₂₃: 203.180) in the HR-EI-MS seemed to arise from the base peak by the loss of a carboxyl unit, which also supports **1** having an ursolic acid skeleton. To determine the precise structure for **1**, ¹H- and ¹³C-NMR analyses were performed with the aid of two dimensional (2D)-NMR [¹H–¹H shift-correlation spectroscopy (COSY),

Chart 1

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Table 1. ^1H (600 MHz)- and ^{13}C (150 MHz)-NMR Data of **1** in CDCl_3 ^{a)}

No.	^1H -NMR	^{13}C -NMR
C ₁		211.9
C ₂	2.40 (1H, dd, $J=12.0, 5.0$, α -eq.H), 3.05 (1H, dd, $J=12.0, 12.0$, β -ax.H)	43.3
C ₃	3.92 (1H, dd, $J=12.0, 5.0$, α -ax.H)	75.6
C ₄		42.4
C ₅	1.12 (1H) ^{b)}	48.5
C ₆	1.42 (1H) ^{b)} , 1.54 (1H) ^{b)}	18.1
C ₇	1.30 (1H) ^{b)} , 1.43 (1H) ^{b)}	32.6
C ₈		39.4
C ₉	2.23 (1H, dd, $J=11.4, 5.4$, α -ax.H)	38.8
C ₁₀		51.9
C ₁₁	1.84 (1H) ^{b)} , 2.40 (1H) ^{b)}	25.1
C ₁₂	5.27 (1H, t-like, $J=3.5$)	126.4
C ₁₃		137.2
C ₁₄		42.2
C ₁₅	1.06 (1H) ^{b)} , 1.84 (1H) ^{b)}	28.0
C ₁₆	1.68 (1H, β -eq.H) ^{b)} , 2.02 (1H, ddd, $J=13.8, 13.8, 4.8$, α -ax.H)	24.1
C ₁₇		48.0
C ₁₈	2.20 (1H, d, $J=11.4$, β -H)	52.8
C ₁₉	1.33 (1H) ^{b)}	39.0
C ₂₀	1.01 (1H, m)	39.0
C ₂₁	1.28 (1H) ^{b)} , 1.51 (1H) ^{b)}	30.6
C ₂₂	1.66 (1H) ^{b)} , 1.72 (1H, ddd, $J=13.0, 13.0, 3.5$)	36.6
C ₂₃	3.44 (1H, d, $J=10.4$ Hz), 3.75 (1H, d, $J=10.4$)	70.9
C ₂₄	1.08 (3H, s)	12.1
C ₂₅	1.35 (3H, s)	15.6
C ₂₆	0.85 (3H, s)	17.9
C ₂₇	1.11 (3H, s)	23.5
C ₂₈		181.4
C ₂₉	0.90 (3H, d, $J=6.6$)	17.0
C ₃₀	0.95 (3H, d, $J=6.3$)	21.1

a) Chemical shifts are shown in ppm, coupling constants in Hz. b) Signals are overlapped by other signal(s) and therefore, their multiplicities could not be determined.

heteronuclear multiple quantum coherence (HMQC), nuclear Overhauser enhancement spectroscopy (NOESY), and heteronuclear multiple bond connectivity (HMBC)] experiments and all protons and carbons were successfully assigned as shown in Table 1. Based on the established ^1H - and ^{13}C -assignments (Table 1), a whole structure for **1** was defined as shown by formula **1** and some important parts, *i.e.*, key points, in the structural elucidation are explained as follows. The COSY spectrum of **1** showed the presence of characteristic carbon linkages of $\text{C}_{(2)}\text{H}_2\text{--C}_{(3)}\text{H}(\text{OH})$ and $\text{C}_{(18)}\text{H--C}_{(19)}\text{H}(\text{CH}_3)\text{--C}_{(20)}\text{H}(\text{CH}_3)$ in **1**. These COSY data, when considered with the HMBC correlations observed in **1** (Fig. 1), suggested that a plane structure of **1** is the same as that depicted in Fig. 1. Finally, the steric structure of **1** was clarified based on the following NMR evidence. The large coupling constant (12.0 Hz) observed between a proton (δ 3.05) of 2-H₂ and 3-H (δ 3.92) shows that these two protons are in a diaxial relationship, consistent with the 2 β - and 3 α -oriented protons. Needless to say, the 3-OH group has a β -equatorial configuration. The presence of a series of cross peaks in the NOESY between 24-Me and 25-Me, between 24-Me and 2 β -H, between 25-Me and 2 β -H, and between 24-Me and 23-CH₂OH suggested that the methyl attached at C-4 is oriented to β -axial (=24-Me) and the CH₂OH group is α -equatorial (=23-CH₂OH). In addition, two characteristic and significant NOESY cross peaks were observed between 9 α -H and 27 α -Me and between the olefinic proton (=12-H) and 18-H, in-

Fig. 1. The Key HMBC Correlations of **1**

dicative of the steric feature around the B-, C-, D-, and E-rings of **1**. Especially, based on the occurrence of the cross peak between 12-H and 18-H, the configuration of 18-H is considered β -equatorial on the D-ring (= β -axial on the E-ring). This result also shows that the D/E-ring juncture of **1** is *cis*. Furthermore, the large coupling constant between 18-H and 19-H ($J_{18,19}=11.4$ Hz) indicates that 18-H and 19-H are in a diaxial relation on the E-ring, that is, 19-H is oriented to α -axial whereas the methyl at C19 (C-29) is β -equatorial. The above-mentioned accumulated evidence revealed **1** to be shown by the structural formula **1** with an ursane (= α -amyrin) framework.

The isolated arjunolic acid was defined as formula **2** based on our own structural elucidation by EI- and HR-EI-MS and ^1H - and ^{13}C -NMR (2D) spectral studies. Furthermore, it was identified by comparison of the ^1H - and ^{13}C -NMR data (in pyridine-*d*₅; 600 and 150 MHz, respectively) with those reported for arjunolic acid.^{4,5)}

The isolated asiatic acid was decided as formula **3** in a similar manner as in the structural elucidation of **2** and further identified by direct comparison of ^1H - and ^{13}C -NMR spectra (in CD_3OD ; 600 and 150 MHz, respectively) with authentic asiatic acid commercially obtained.

The isolated flavonol glucuronide (**4**) gave the quasi-molecular ion, $(\text{M-H})^-$ at 477 and a significant fragment ion, $(\text{the aglycone-H})^-$ at m/z 301 in the negative (=neg.) ion FAB-MS spectrum. Based on these MS data together with the ^1H - and ^{13}C -NMR (in $\text{DMSO-}d_6$; 600 and 150 MHz, respectively) and these 2D analyses the structure was assigned to formula **4**. Moreover, the identity with quercetin 3-*O*- β -D-glucuronide was confirmed by comparison of the ^{13}C -NMR data with the reported data.⁶⁾

The second flavonol glucuronide (**5**) isolated was identified with myricetin 3-*O*- β -D-glucuronide by comparison of its neg. ion FAB-MS, ^1H - and ^{13}C -NMR (in $\text{DMSO-}d_6$; 600 and 150 MHz, respectively) with those previously reported.⁷⁾

The last flavonol glucuronide analogue (**6**) isolated gave the $(\text{M-H})^-$ ion peak at 533 in the neg. ion FAB-MS. The corresponding HR spectrum revealed the molecular formula to be $\text{C}_{25}\text{H}_{26}\text{O}_{13}$. In addition, the EI- and HR-EI-MS spectra of **6** exhibited a significant fragment ion at m/z 302 as the base peak, because of the aglycone of $\text{C}_{15}\text{H}_{10}\text{O}_7$. ^1H - and ^{13}C -NMR assignments (see Experimental) were carried out with the aid of the detailed 2D analyses (COSY, HMQC, NOESY, and HMBC) and the resulting NMR evidence revealed **6** to be defined as quercetin 3-*O*-(6''-n-butyl glucuronide). This flavonol derivative has been already isolated from leaves of *Parthenocissus tricuspidata* (Vitaceae).⁸⁾ This report appears the second instance of its isolation from natural sources.

However, the question has been raised whether this butyl ester is a genuine naturally occurring product or an artificial compound derived from quercetin 3-*O*-glucuronide during the extraction procedure with *n*-butanol.

Experimental

General ^1H - and ^{13}C -NMR spectra were measured on a JEOL JNM-ECA 600 spectrometer (^1H at 600 MHz and ^{13}C at 150 MHz). Chemical shifts are given in δ values (ppm) relative to tetramethylsilane (TMS) as internal standard. EI- and HR-EI-MS spectra (at 30 eV), along with FAB- and HR-FAB-MS spectra in negative mode (matrix: triethanolamine or glycerin), were obtained by JEOL JMS-700T spectrometer. Optical rotations were determined on a JASCO DIP-140 polarimeter. For column chromatography, silica gel 60 (230–400 mesh, Merck), Chromatorex ODS DM1020T (100–200 mesh, Fuji Silysia), and Sephadex LH-20 (Amersham Biosciences) were used. Kiesel gel 60 F₂₅₄ (Merck) and RP-18 F₂₅₄ (Merck) were used for analytical TLC. Preparative HPLC was performed on a JAI LC-918 instrument with an RI-50 differential refractometer and a JAIGEL-ODS column. An authentic asiatic acid used in this work was commercially obtained from Extrasynthese in France.

Plant Material Whole plants of *O. cheiranthifolia* were collected at a sandy beach in Oregon, U.S.A., in July 1997. A voucher specimen (Murata J. *et al.*, No. 97027) was deposited in the Herbarium, Botanical Gardens, The University of Tokyo (TI), Japan.

Extraction and Isolation The whole plants of *O. cheiranthifolia* were soaked in acetone (2.0 l) and the plant materials (118.0 g) after soaking were extracted three times with MeOH (each 2.0 l) at room temperature for 15, 9, and 9 d in turn. The resulting MeOH extract (22.2 g) was suspended in water (500 ml) and extracted four times with EtOAc (500 ml $\times$ 1 then 250 ml $\times$ 3) and subsequently, three times with *n*-BuOH (300 ml $\times$ 3) to afford EtOAc (3.9 g) and *n*-BuOH (8.1 g) extracts, respectively. Most (3.8 g) of the EtOAc extract was subjected to column chromatography on silica gel (190.0 g) eluted successively with CHCl_3 -MeOH (20:1; total 1050 ml) [giving 30 fractions of Nos. 1 to 30], (10:1; total 1320 ml) [giving 16 fractions of Nos. 31 to 46], the lower phase of CHCl_3 -MeOH- H_2O (7:3:1; total 1.54 l) [giving 41 fractions of Nos. 47 to 87], the lower phase of CHCl_3 -MeOH- H_2O (65:35:10; total 440 ml); [giving 6 fractions of Nos. 88 to 93], and a mixture solvent of CHCl_3 -MeOH- H_2O (6:4:1; total 1.1 l); [giving 20 fractions of Nos. 94 to 113]. The fractions of Nos. 18 and 19 (20.6 mg) were collected and subjected to reversed-phase (ODS Chromatex; 5.1 g) chromatography eluted with MeOH- H_2O (3:1) [giving 9 fractions (10 ml per fraction)] and the resulting third fraction gave compound **1** (2.2 mg). The fractions of Nos. 28–32 (85.6 mg) were collected and rechromatographed over ODS Chromatex (8.2 g) eluted with MeOH- H_2O (3:1) [giving 10 fractions (10 ml per fraction)] and the resulting third fraction (15.7 mg) was subjected to preparative HPLC separation [JAIGEL-ODS column; an eluting agent, 80% aqueous (=aq.) MeOH; a rate of flow, 5 ml/min] to yield compounds **2** (4.3 mg) and **3** (5.6 mg). The fractions of Nos. 100–107 (146.8 mg) were collected and further column-chromatographed over ODS Chromatex (15.6 g) [eluting with CH_3CN - H_2O (1:7) and giving 28 fractions (5 ml per fraction)] and the resulting fractions 9–11 gave compound **4** (38.2 mg) in pure form. An aliquot (3.8 g) of the *n*-BuOH extract (*vide ante*) was chromatographed over ODS (192 g), and eluted (100 ml per fraction) successively with CH_3CN : H_2O (1:4) [giving 15 fractions (Nos. 1 to 15)], CH_3CN : H_2O (1:2) [giving 13 fractions (Nos. 16 to 28)], CH_3CN : H_2O (1:1) [giving 4 fractions (Nos. 29 to 32)], and CH_3CN [giving 2 fractions (Nos. 33, 34)]. The fractions of Nos. 4–6 (937.7 mg) eluted with CH_3CN : H_2O (1:4) were combined and subjected to a Sephadex LH-20 column eluted with 30% aq. MeOH to afford 17 fractions (30 ml per fraction), the tenth fraction of which gave pure **5** (14.7 mg). The fractions of Nos. 9 and 10, eluted with CH_3CN : H_2O (1:4), corresponded to pure **4** (200.1 mg). The fractions of Nos. 22 and 23 (77.8 mg) eluted with CH_3CN : H_2O (1:2) were further separated on Sep-Pak C₁₈ column (Waters; 10 g) eluted subsequently with CH_3CN : H_2O (2:3) [giving fractions of No. 1 to No. 7 (5 ml per fraction)] and with CH_3CN : H_2O (1:1) [giving fraction No. 8 (a 10 ml amount), fractions Nos. 9 and 10 (each 20 ml amount)] and the resulting fraction No. 9 yielded **6** (19.6 mg).

Cheiranthic Acid (1): A colorless glassy solid, $[\alpha]_D^{+25} +81.1^\circ$ ($c=0.5$, CHCl_3). EI-MS (30 eV) m/z (%): 486 (13, M^+), 248 (100), 219 (10), 203 (45), 133 (23). HR-EI-MS m/z : 486.334 (Calcd for $\text{C}_{30}\text{H}_{46}\text{O}_5$, M^+ : 486.335), 248.177 (Calcd for $\text{C}_{16}\text{H}_{24}\text{O}_2$: 248.178), 203.179 (Calcd for $\text{C}_{15}\text{H}_{23}$, $\text{C}_{16}\text{H}_{24}\text{O}_2$ -COOH: 203.180). ^1H - and ^{13}C -NMR: Given in Table 1.

2: EI-MS (30 eV) m/z (%): 488 (0.7, M^+), 248 (100), 219 (7.6), 203 (76.6), 191 (11.9), 133 (15.7). HR-EI-MS m/z : 488.349 (Calcd for $\text{C}_{30}\text{H}_{48}\text{O}_5$, M^+ : 488.350), 248.178 (Calcd for $\text{C}_{16}\text{H}_{24}\text{O}_2$: 248.178), 203.180 (Calcd for $\text{C}_{15}\text{H}_{23}$, $\text{C}_{16}\text{H}_{24}\text{O}_2$ -COOH: 203.180). The ^1H - and ^{13}C -NMR spectral data of **2** were in agreement with those reported for arjunolic acid.^{4,5)}

3: EI-MS (30 eV) m/z (%): 488 (1.3, M^+), 248 (100), 219 (12.5), 203 (52.8), 191 (15.2), 133 (26.8). HR-EI-MS m/z : 488.350 (Calcd for $\text{C}_{30}\text{H}_{48}\text{O}_5$, M^+ : 488.350), 248.177 (Calcd for $\text{C}_{16}\text{H}_{24}\text{O}_2$: 248.178), 203.180 (Calcd for $\text{C}_{15}\text{H}_{23}$, $\text{C}_{16}\text{H}_{24}\text{O}_2$ -COOH: 203.180). The structure of **3** was confirmed by direct comparison of ^1H - and ^{13}C -NMR spectra (in MeOH- d_4 ; 600 and 150 MHz, respectively) with an authentic sample of asiatic acid.

4: FAB-MS (negative ion mode) m/z : 477 ($\text{M}-\text{H}^-$), 301 (aglycone- H^-). ^1H -NMR (in DMSO- d_6 ; 600 MHz): 3.26–3.41 (3H, m, 2', 3', 4'-Hs), 3.58 (1H, d, $J=9.6$ Hz, 5'-H), 5.51 (1H, d, $J=7.2$ Hz, 1'-H), 6.21 (1H, d, $J=2.0$ Hz, 6-H), 6.41 (1H, d, $J=2.0$ Hz, 8-H), 6.84 (1H, d, $J=8.8$ Hz, 5'-H), 7.53 (1H, d, $J=2.0$ Hz, 2'-H), 7.61 (1H, dd, $J=8.8$, 2.0 Hz, 6'-H), 12.57 (1H, s, 5-OH). The ^{13}C -NMR data (in DMSO- d_6 ; 150 MHz) of **4** was consistent with those (in DMSO- d_6 ; 75.47 MHz) reported for quercetin 3-*O*- β -D-glucuronide.⁶⁾

5: FAB- and HR-FAB-MS (negative ion mode) m/z : 493.062 [Calcd for $\text{C}_{21}\text{H}_{17}\text{O}_{14}$, ($\text{M}-\text{H}^-$): 493.062], 317 (aglycone- H^-). EI- and HR-EI-MS (%): 318.037 (47) [Calcd for $\text{C}_{15}\text{H}_{10}\text{O}_8$, (aglycone) $^+$: 318.037], 170 (100). ^1H -NMR (in DMSO- d_6 ; 600 MHz): 3.27 (1H, dd, $J=9.0$, 8.4 Hz, 3'-H), 3.40 (1H, dd, $J=8.4$, 7.8 Hz, 2'-H), 3.42 (1H, dd, $J=9.6$, 9.0 Hz, 4'-H), 3.55 (1H, d, $J=9.6$ Hz, 5'-H), 5.50 (1H, d, $J=7.8$ Hz, 1'-H), 6.20 (1H, d, $J=1.8$ Hz, 6-H), 6.38 (1H, d, $J=1.8$ Hz, 8-H), 7.19 (2H, s, 2', 6'-Hs), 12.59 (1H, s, 5-OH). Finally, **5** was identified by comparing its FAB-MS (negative ion mode), ^1H - and ^{13}C -NMR (in DMSO- d_6 ; 600 and 150 MHz, respectively) spectral data with those reported for myricetin 3-*O*- β -D-glucuronide.⁷⁾

Quercetin 3-*O*-(6'-*n*-Butyl Glucuronide) (6): HR-FAB-MS (negative ion mode) m/z : 533.129 [Calcd for $\text{C}_{25}\text{H}_{25}\text{O}_{13}$, ($\text{M}-\text{H}^-$): 533.130]. EI- and HR-EI-MS m/z (%): 302.044 (100) [Calcd for $\text{C}_{15}\text{H}_{10}\text{O}_7$, (aglycone) $^+$: 302.043]. ^1H -NMR (in CDCl_3 ; 600 MHz): 0.83 [3H, t, $J=7.8$ Hz, $\text{CH}_3(\text{CH}_2)_3\text{O}-$], 1.25 [2H, sextet, $J=7.8$ Hz, $\text{CH}_3\text{CH}_2(\text{CH}_2)_2\text{O}-$], 1.50 (2H, m, $\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{O}-$), 3.47 (1H, dd, $J=9.0$, 9.0 Hz, 3'-H), 3.54 (1H, dd, $J=9.0$, 7.8 Hz, 2'-H), 3.60 (1H, dd, $J=9.6$, 9.0 Hz, 4'-H), 3.74 (1H, d, $J=9.6$ Hz, 5'-H), 4.06 [2H, t, $J=6.6$ Hz, $\text{CH}_3(\text{CH}_2)_2\text{CH}_2\text{O}-$], 5.28 (1H, d, $J=7.8$ Hz, 1'-H), 6.19 (1H, d, $J=1.8$ Hz, 6-H), 6.38 (1H, d, $J=1.8$ Hz, 8-H), 6.84 (1H, d, $J=8.4$ Hz, 5'-H), 7.60 (1H, d, $J=1.8$ Hz, 2'-H), 7.61 (1H, dd, $J=8.4$, 1.8 Hz, 6'-H). ^{13}C -NMR (in CDCl_3 ; 150 MHz): 159.2 (C-2), 135.4 (C-3), 179.3 (C-4), 163.1 (C-5), 100.0 (C-6), 166.0 (C-7), 94.8 (C-8), 158.5 (C-9), 105.6 (C-10), 122.9 (C-1'), 117.2 (C-2'), 146.0 (C-3'), 149.9 (C-4'), 116.0 (C-5'), 123.5 (C-6'), 104.5 (C-1''), 75.4 (C-2''), 77.5 (C-3''), 72.7 (C-4''), 77.3 (C-5''), 170.2 (C-6''), 66.3 (butyl C-1), 31.5 (butyl C-2), 20.0 (butyl C-3), 14.0 (butyl C-4). The compound having the same structure as **6** was recently isolated from leaves of *P. tricuspidata* (Vitaceae).⁸⁾

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